

**The
Medicinal and
Dietetic value of
Marmite**

(YEAST EXTRACT)

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INTRODUCTION

Marmite has been known for many years as a nutritious palatable food extract and it has been used empirically by physicians for some time, although it is only comparatively recently that its many possibilities as a therapeutic agent have been appreciated.

**Marmite a
yeast extract
with high
Vitamin B
content**

Marmite is an extract of yeast prepared under conditions which ensure the retention in the final product, not only of the valuable food substances present in the original yeast cell but also of practically its entire content of the Vitamin B complex.

**Marmite
prescribed in
pernicious and
other anæmias**

Reports have been received frequently from members of the medical profession who have prescribed Marmite ; indeed, many have attributed their own well-being to its use. The value of Marmite in the prophylaxis and treatment of diseases associated with Vitamin B deficiency is now well established ; its use in the treatment of certain types of anæmia appears to be of considerable significance, whilst the discovery of its efficacy in cases of Addisonian pernicious anæmia seems to be of outstanding importance.

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VITAMIN B

Importance of Vitamins for preservation of health

The importance of the ingestion of adequate quantities of certain vitamins for the maintenance of good health is now no longer doubted.

The special report on vitamins issued in 1932 by the Medical Research Council (Vitamins: A Survey of Present Knowledge) is, in fact, an indication of an increasing acknowledgment of the importance of the subject.

According to this report (page 226) "*it is now becoming generally recognized that much subnormal health and development, and even incidence of disease, are associated with a partial deficiency of one or more of these accessory substances.*"

That a relatively large section of the report is

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devoted to the Vitamin B complex seems worthy of special comment, and further, that it is Marmite to which reference is made repeatedly as a valuable source of the B factors.

Complex nature of Vitamin B

Although Vitamin B has been regarded for some time as of the utmost importance, the recognition of its complex nature is still a matter of recent history, and its true significance in health and in disease has probably not yet been fully realised. There is now evidence for the existence of at least five components of the Vitamin B complex. The most important of these factors, from the medical aspect, appear to be those which were first identified as B₁ and B₂ and known respectively as the anti-neuritic (anti-beriberi) and pellagra-preventive vitamins. As stated on page 160 of the Medical Research Council's publication mentioned above, yeast contains both these factors in abundance—moreover, "*yeast is the richest known source of Vitamin B₁ and is unaffected in this respect by autolysis and extraction.*"

Marmite a rich source of Vitamins B₁ and B₂

It is of special interest to note that Marmite was the particular yeast extract which was used by the research workers who arrived at the conclusion stated above, and that they report Marmite to be also one of the richest sources of the B₂ factor.

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In view of the establishment of Marmite as a potent source of the essential B Vitamins it is not surprising that it is now so widely used in the many conditions of ill-health which are considered to be associated with Vitamin B deficiency.

USES OF MARMITE

FOR THE MAINTENANCE OF GOOD HEALTH

Degrees of Vitamin B deficiency

Although complete avitaminosis B is rarely found, and beri-beri and pellagra are almost unknown in England, the view is now widely held that in this country "*the urban populations are, as a whole, consuming diets which are to a greater or less extent deficient in the Vitamins B*" (J.C. Drummond: Cantor Lectures 1932).

It is this continuous subsistence on diets that are partially deficient in the Vitamin B complex, that is considered to be responsible indirectly for a far greater amount of ill-health than is generally realised.

Beri-beri and pellagra

In other countries, especially in districts where cereals form the staple food, definite symptoms of Vitamin B deficiency are more common. The work of R. McCarrison ("*Problems of Nutrition in India.*" Nutrition Abstracts and Reviews, July, 1932, page 1) provides ample evidence of the widespread deficiency of Vitamin B found amongst the rice-eaters of India.

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It is well known that beri=beri is prevalent where rice is the national diet and that pellagra occurs chiefly amongst maize-eaters, and, moreover, that both these diseases respond promptly to the administration of Vitamin B.

It would appear that Marmite has a somewhat special use in tropical and sub=tropical countries over and above its relatively general use in the more temperate zones. Firstly its apparent specific use in conditions such as beri=beri and in the so-called tropical anæmias and sprue, and secondly its particular value as a stable vegetable product that in no way offends against any religious or dietary regulations which demand a strictly vegetarian régime.

Functions of Vitamin B The general functions of Vitamin B have been summarised in the following terms :—

" Vitamin B helps maintain the appetite, aids growth, reproduction, lactation, proper function of the digestive tract, including peristalsis ; and increases the resistance to infection " (Journ. Amer. Med. Assoc., Feb. 27th, 1932, p. 726).

The Vitamin B reserves of the body appear to be practically negligible, and the regular intake of an adequate supply of these essential factors is, therefore, necessary.

In order to make sure that the Vitamin B

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intake is adequate to meet the requirements of the body, a small dose of Marmite should be administered daily. The methodical use of Marmite in this manner affords a simple and effective means of preventing diseases that may result from the physiological disturbances which are attributed to lack of Vitamin B. Further, Marmite serves also as an exceptionally pleasant tonic-food, which counteracts the tendency to fatigue and contributes towards general physical fitness.

IN INTESTINAL STASIS

Prevention and correction of constipation Although it is not clear exactly what rôle the Vitamin B complex plays in influencing the functions of the gastro-intestinal tract, L.S.P. Davidson has shown definitely that Marmite improves its efficiency (Lancet, Dec. 26th, 1931, p. 1395). Correlated with this there is considerable experimental evidence to show that "*prolonged partial deficiency of Vitamin B caused degeneration and loss of tone of the walls of the alimentary canal*" (B.M.J., Oct. 29th, 1932, p. 803).

From these findings it may be inferred that constipation with its consequences, which is so prevalent at the present time amongst all classes of the population, may be prevented and corrected by the systematic daily administration of Marmite.

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IN PREGNANCY LACTATION AND INFANCY

During pre-natal and post-natal periods As stated on pages 227 and 274 of the report issued by the Medical Research Council, to which reference is made elsewhere, "*pregnancy and lactation in women and growth in children also call for larger supplies of the vitamins the lactating mother dissipates at least 60 per cent. of the daily Vitamin B intake in the metabolism of transfer to the milk.*"

The prophylactic treatment of the mother—during both pre-natal and post-natal periods—by supplementing the diet with Marmite is suggested as a necessary routine procedure.

In infancy In outlining the best method for providing infants with sufficient vitamins, the following recommendation is made in the report (page 276) :—

"Marmite for Vitamin B complex—a small quantity daily."

Further, it has been claimed (page 250) that certain definite symptoms including "*anorexia, loss of weight, fretfulness, pallor, and stiffness of the limbs and neck*" result from Vitamin B deficiency in infants and that these symptoms respond rapidly to Vitamin B therapy.

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**In hæmorrhagic
disease of the
new-born**

In reporting (Lancet, Oct. 22nd, 1932, p. 887) upon a series of cases of hæmorrhagic disease of the new-born, N.B. Capon states that he prescribes half-a-teaspoonful of Marmite twice daily to infants suffering from this condition. He observes that it has been suggested that lack of Vitamin B in the mother's diet results in deficiency of prothrombin in the baby.

IN ANÆMIA

In spite of the vast amount of work which has been carried out during the last few years on the ætiology of the various anæmias, the subject remains somewhat obscure.

A fact which has emerged, however, is that Marmite has a remarkably beneficial effect, prophylactically and therapeutically, in anæmias of several types. It may be that this pronounced efficacy of Marmite is due to its high content of Vitamin B, or it may be that Marmite contains some other factor which is essential to the blood-making mechanism.

ANÆMIA AND GENERAL DEBILITY

**Marmite a
tonic-food**

In cases of debility, whether associated with anæmia or not, the inclusion of Marmite in the diet is found to be very useful—its potency in Vitamin B no doubt exercising some salutary effect.

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It is known that the principles of the Vitamin B complex possess a special power of stimulating the gastro-intestinal tract, promoting the appetite and improving alimentation.

These all-important B Vitamins are presented in Marmite in such a palatable form that it offers an ideal means for their administration to invalids of all ages.

Marmite appears to exert a markedly favourable influence upon the metabolic processes and is, therefore, recommended as a general tonic in all run-down conditions as well as during severe illness and convalescence.

ANÆMIAS OF PREGNANCY AND SPRUE

In tropical anæmias Certain megalocytic anæmias, in which the blood picture resembles that of the true pernicious type, have been shown to yield to Marmite in a dramatic manner—a fact to which special attention is directed in the Medical Research Council's Report on Vitamins.

In anæmia of pregnancy Reports of a number of cases of so-called "*pernicious anæmia of pregnancy*" and "*tropical anæmia*" which were published by Lucy Wills, working in Bombay (B.M.J. June 20th, 1931, p. 1059), demonstrate the extraordinary value of Marmite in this respect. The rapid improvement and

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cure of pregnancy anæmia with Marmite has been confirmed in Calcutta by V.B. Green=Armytage, who makes the following statement—“ *We have had excellent results with Marmite given in 2 tea-spoonful doses twice a day either in cold water or in soup.*

Marmite is very cheap and is uniformly more popular with patients than is liver, being of vegetable origin.

In a consecutive series of 50 cases I have no hesitation in stating that the clinical and pathological state of the patient greatly benefited as a result of Marmite treatment” (Indian Medical Gazette, March, 1932, p. 144).

**In anæmia
of sprue**

Similarly in the anæmia associated with sprue, Sir Leonard Rogers has recorded rapid improvement as the result of treatment with Marmite (Lancet, April, 23rd 1932, p. 906).

ANÆMIA OF CÆLIAC DISEASE

Marmite has been shown to be beneficial also in the treatment of megalocytic hyperchromic anæmia associated with cœliac disease.

The proven value of Marmite in pregnancy anæmia suggested its use in these cases. Janet Vaughan and D. Hunter report (Lancet, April 16th, 1932, p. 829) that “ . . . the response of the anæmia to Marmite was as dramatic as that obtained

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by the administration of liver extract in the treatment of Addisonian pernicious anæmia."

PERNICIOUS ANÆMIA

The publication recently by A. Goodall (Lancet, Oct. 8th, 1932, p. 781) of clinical reports upon a series of cases of pernicious anæmia in which Marmite was administered with success is a matter of special interest.

In primary and relapse cases

The investigator records the beneficial results obtained by treating primary and relapse cases with large doses of Marmite. He considers that "*Marmite is efficacious in the treatment of the average case of pernicious anæmia. . . . Most patients find it palatable and welcome it as a change from liver. It is a pleasant solution to the difficulty that patients in remote districts often find in obtaining liver, and in getting liver in good condition in warm weather. Moreover, Marmite would appear to be a useful alternative to liver in gouty, rheumatic, and high pressure subjects.*"

Maintenance cases

Further, after remarking that without exception his maintenance cases have done well on Marmite treatment, he concludes that "*the administration of Marmite in small doses is an adequate means of maintaining cases of recovered pernicious anæmia in good health.*"

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Marmite as
source of
"extrinsic
factor."

The work of M.B. Strauss and W.B. Castle (Lancet, July 16th, 1932, p. 111) is of more than ordinary interest as an attempt at the elucidation of the ætiology of pernicious anæmia. These workers propound the hypothesis that normal hæmopoiesis is dependent upon the interaction of two essential factors—namely an intrinsic and an extrinsic factor. From their experiments they suggest that the intrinsic factor is present in normal human gastric juice, and that the extrinsic factor is contained in certain foodstuffs, is abundant in Marmite and may be identical with Vitamin B₁₂. They conclude that in the various anæmias one or other of these specific factors is lacking.

They find that the administration of Marmite in conjunction with gastric juice supplies an economical hæmopoietic substance which produces a prompt reticulocyte response in pernicious anæmia.

Confirmatory evidence of the value of Marmite in pernicious anæmia has been furnished by a subsequent communication to the medical press by C.C. Ungley (Lancet, Oct. 15th, 1932, p. 867). In this communication the opinion is expressed that "*in Addison's anæmia Marmite in doses of 4=0z. daily usually produces a satisfactory reticulocyte response.*"

Although there has been some controversy

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concerning the efficacy of Marmite in true pernicious anæmia (Lancet, Dec. 26th, 1931, p. 1395 ; Ibid, Oct. 22nd, 1932, p. 919) it is generally conceded that it does contain a valuable anti-anæmic substance and, in view of the clinical research cited above, it now appears likely that Marmite will become an important part of the regular diet of the pernicious anæmia patient.

Advantages of prescribing Marmite The advantages of prescribing a product of the pleasant nature of Marmite are obvious and will appeal to physician and patient alike. For the maintenance case—the person who must continue to take some anti-anæmic principle indefinitely—Marmite will prove particularly acceptable.

ADMINISTRATION and DOSAGE

There are many ways in which Marmite may be administered, the most popular being either as a soup, or in hot milk or spread on bread and butter or on buttered toast.

A small teaspoonful of Marmite stirred into a cup of boiling water forms an appetising hot drink which is appreciated by the majority of people of all ages and in all conditions of health. Alternatively, Marmite may be added to soups and stews and to many savoury dishes.

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The dosage of Marmite varies with the nature and severity of the case, the amount recommended for different purposes ranging from half-a-drachm to four ounces daily.

The system of dosage that is generally adopted is indicated below.

Vitamin B Deficiency	..	$\frac{1}{2}$ to 2 ounces daily.
Infancy		$\frac{1}{2}$ to 2 drachms daily.
Hæmorrhage of the New=		
born		1 drachm daily.
Anæmia of Coeliac Disease		3 drachms daily.
Anæmia of Pregnancy	..	2 to 4 drachms daily.
Pernicious Anæmia :—		

(a) Primary and Relapse

Cases $1\frac{1}{2}$ to 4 ounces daily.

(b) Maintenance Cases 3 drachms daily.

Marmite is obtainable from the leading Chemists,
Stores and Grocers.

Jars of 1-oz. ; 2-oz. ; 4-oz. ; 8-oz. ; 16-oz.

Manufactured in England by

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